

**Recommendation CCTF 5 (2001):
Technical guidelines for manufacturers of Global Navigation Satellite Systems
receivers used for timing**

The Consultative Committee for Time and Frequency,

considering that

- the common-view method for observing satellites in the Global Positioning System (GPS) and the Global Navigation Satellite System (GLONASS) provides one of the most precise and accurate methods of time comparison between remote clocks on and close to the Earth, and is used for the formation of the international time references International Atomic Time (TAI) and Coordinated Universal Time (UTC),
- the uncertainty of this method due to space factors, such as satellite ephemerides and ionospheric delays, and other sources of uncertainty, with the exception of receiver hardware, is close to 1 ns,
- other methods using global navigation satellite systems data for time and frequency transfer are under development that may provide even smaller uncertainty,
- the main source of uncertainty of these methods is instability of time receiving hardware, being frequently of several nanoseconds for short periods (several days) and in extreme cases reaching up to tens of nanoseconds;

recommends that

- the manufacturers of receivers used for timing adopt the CCTF Group on Global navigation satellite systems Time Transfer Standards (CGGTTS) technical guidelines for receiver hardware for use in time and frequency transfer,
- timing laboratories pay particular attention to the conditions under which their time receiving equipment operate.

Note appended to Recommendation CCTF 5 (2001)

The CGGTTS technical guidelines are available in working documents of the 15th CCTF meeting.